Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method of monitoring cross-talk, at a point in an optical system, arising at least in part from a non-linear process in a transmission medium utilized in the optical system, in a multiplexed optical signal having a plurality of channels upon one or more of which has been impressed, at another point in the optical system, a unique dither, the method comprising:

determining channel power of at least one channel of the plurality of channels;

determining a fractional power of any dither present upon the at least one channel resulting at least in part from the non-linear process in the transmission medium; and

determining a power transfer coefficient from the fractional power and the channel power of the at least one channel, the power transfer coefficient indicative of cross-talk occurring on the at least one channel from any of the plurality of channels upon which the unique dither has been impressed, the cross-talk due at least in part to the non-linear process in the transmission medium.

2. (Original) A method according to claim 1 wherein the power transfer coefficient is determined from an equation $\beta_{ij} = (\beta_{ij}P_j)/P_j$ wherein β_{ij} is the power transfer coefficient, P_j is the power of a channel, j, corresponding to the at least one channel and $\beta_{ij}P_j$ is the fractional power of a dither, i, corresponding to the dither present upon the at least one channel.

3. (Original) A method of controlling output characteristics of the multiplexed optical signal comprising the method of claim 1 and further comprising providing instructions for controlling the power transfer coefficient.

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Currently amended) An optical apparatus adapted to monitor cross-talk, at a point in an optical system, arising at least in part from a non-linear process in a transmission medium utilized in the optical system, in a multiplexed optical signal having a plurality of channels upon one or more of which has been impressed, at another point in the optical system, a unique dither, the apparatus comprising:

an OSA (Optical Spectrum Analyzer) adapted to measure an indicator of channel power of at least one channel of the plurality of channels and to measure an indicator of a fractional power of any dither present upon the at least one channel resulting at least in part from the non-linear process in the transmission medium; and

a control circuit adapted to determine a power transfer coefficient from the fractional power and the channel power of the at least one channel, the power transfer coefficient indicative of cross-talk occurring on the at least one channel from any of the plurality of channels upon which the unique dither has been impressed, the cross-talk due at least in part to the non-linear process in the transmission medium.

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

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33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)

39. (New) A method according to claim 1 wherein a non-linear process in a transmission medium comprises stimulated Raman scattering.

40 (New) An apparatus according to claim 15 wherein a non-linear process in a transmission medium comprises stimulated Raman scattering.

41. (New) A method according to claim 1 wherein at least one of the plurality of channels of the multiplexed optical signal is impressed with a plurality of dithers to provide wave identification (WID) information.

42. (New) An apparatus according to claim 15 wherein the indicator of the fractional power, $\beta_{ij}P_j$, and the indicator of the channel power, P_j, are voltages and one of the OSA and the control circuit is adapted convert the voltages into powers.

43. (New) An apparatus according claim 15 applied to a multiplexed optical signal wherein at least one channel of the plurality of channels having impressed a unique dither comprises at least one additional unique dither to provide WLD.

44. (New) An apparatus according to claim 15 comprising a plurality of basic functional components which are optical devices.